

A method of processing an optical signal in an optical communications network, said method comprising the steps of:

inputting said optical signal to an input of a modulator; and

overdriving said modulator with a modulation voltage signal value to

produce a modulated optical signal having an extinction ratio reduced from
maximum, wherein said modulated optical signal having a reduced extinction
ratio as measured before propagation over the optical communications network
yields a bit error rate improvement at a receiver of said modulated optical signal
after propagation over the network

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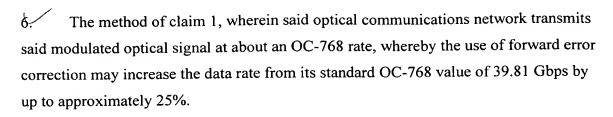
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2. The method of claim 1 further comprising the step of, transmitting said modulated optical signal across an optical medium to a receiver, wherein said receiver receives said modulated optical signal having an eye with a compressed central portion.

The method of claim 1, wherein said modulator comprises a Mach-Zehnder Modulator (MZM).

The method of claim 1, wherein said optical communication network transmits said modulated optical signal at about an OC-192 rate, whereby the use of forward error correction may increase the data rate from its standard OC-192 value of 9.95328 Gbps by up to approximately 25%.

5. The method of claim 1, wherein said optical communications network transmits said modulated optical signal at about an OC-48 rate, whereby the use of forward error correction may increase the data rate from its standard OC-48 value of 2.488 Gbps by up to approximately 25%.



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The method of claim 2, wherein said optical medium comprises a single mode 7. optical fiber.

A method for improving a bit error rate of an optical signal transmitted 10 over an optical transmission medium said method comprising the steps of:

providing a stabilized light beam to an optical modulator;

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asserting at said optical modulator a modulation drive signal having a peak-to-peak voltage value; and

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improving said bit error rate of said optical signal transmitted across said optical transmission medium by increasing said peak-to-peak voltage value of said modulation drive signal to overdrive said optical modulator to cause said optical signal to have a reduced extinction ratio as measured before propagation over an optical transmission medium at a receiver coupled to the end of said optical transmission medium.

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The method of claim 8, wherein a laser diode provides said stabilized light beam.

The method of claim 8, wherein said optical modulator comprises a semiconductor Mach-Zehnder modulator (MZM).

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The method of claim 8, wherein said optical conductor comprises a single mode 11. optical fiber.

- 12. The method of claim 8, wherein said optical modulator comprises a lithium niobate Mach-Zehnder modulator (MZM).
- 13. The method of claim 8, wherein said optical modulator comprises a polymerbased Mach-Zehnder modulator (MZM).
  - The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-192, whereby the use of forward error correction may increase the data rate from its standard OC-192 value of 9.95328 Gbps by up to approximately 25%.
- The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-48, whereby the use of forward error correction may increase the data rate from its standard OC-48 value of 2.488 Gbps by up to approximately 25%.
- The method of claim 8, wherein said optical modulator supports a modulation rate at about OC-768, whereby the use of forward error correction may increase the data rate from its standard OC-768 value of 39.81 Gbps by up to approximately 25%.
- A method for modulating an optical carrier wherein said method yields an improved bit error rate for said modulated optical carrier said method comprising the steps of:

asserting said optical carrier at an optical input of an optical modulator; and

overdriving said optical modulator with a modulation voltage signal to produce said modulated optical carrier, whereby said overdriving of said optical modulator causes said modulated optical carrier to have a less than maximum extinction ratio to improve said bit error rate of said modulated optical carrier as received by a receiver of said optical carrier.

The method of claim 17, wherein said optical modulator is a semiconductor Mach-Zehnder modulator (MZM).

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19. The method of claim 17, wherein said optical modulator is a lithium niobate Mach-Zehnder modulator (MZM).

- 20. The method of claim 17, wherein said optical modulator is a polymer-based Mach-Zehnder modulator (MZM).
  - 21. An apparatus for modulating an optical carrier, said apparatus comprising of: an optical modulator; and
    - a drive voltage controller to control a modulator voltage value supplied to said optical modulator to cause said optical modulator to produce a modulated optical carrier having an extinction ratio reduced from a maximum as measured before propagation over a single mode fiber wherein said modulation voltage value supplied to said optical modulator exceeds a voltage value necessary to produce said maximum extinction ratio.
  - 22. The apparatus of claim 21 wherein said optical modulator is a Mach-Zehnder modulator (MZM).
- 20 23. The apparatus of claim 22 wherein said MZM comprises one of a semiconductor MZM, a lithium niobate MZM and a polymer-based MZM.
- 24. The apparatus of claim 21 wherein said extinction ratio reduced from said maximum produces an improved bit error rate as measured at a receiver of said modulated optical carrier after propagation over fiber.